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## A fuzzy approach to improve CSR reporting: an application to the Global Reporting Initiative indicators

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### Abstract

Organizations' activities impact on environment, economy and society. The recognition of business effects is the basis of the Corporate Social Responsibility (CSR). Nevertheless, not all social responsibility issues have the same relevance for every organization. The evaluation of CSR performance depends on those dimensions and stakeholders that are really affected by company activities. Moreover, there is the necessity to create appropriate measures to quantify the relevant sustainability aspects for an organization. This paper proposes a fuzzy AHP to support decision makers for effectively determining which Global Reporting Initiative (GRI) indicators are the most significant in the CSR assessment.

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### 1. Introduction

CSR is a business approach involving not only economic dimensions, but also social and environmental ones, benefitting people, communities and overall society (ISO, 2002). Indeed, CSR commitment offers companies opportunities and benefits such customer loyalty and good reputation, but the possibility to achieve these business returns depends on how stakeholders perceive the company social conduct (Costa & Menichini, 2013) and how companies communicate their CSR commitment (Calabrese, Costa, Menichini, Rosati, & Sanfelice, 2013a). For this reason, companies integrate sustainability issues within corporate reports and the increasing demand of reliable information has lead companies to adopt Global Reporting Initiative (GRI) guidelines. GRI standard is the most widely framework to support company in its sustainability reporting because of it ensures transparency and completeness of the information disclosed.

In order to define the Sustainability Report content, companies have to select which CSR issues are relevant for evaluating their CSR commitment and performance (Calabrese, Costa, Menichini, & Rosati, 2013b). In this paper, we present a Fuzzy AHP methodology to select GRI Performance Indicators, which a company should include in its sustainability report in order to evaluate the performance of its CSR relevant topics. These Indicators are defined Material Performance Indicators (MPIs) (GRI, 2011).

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## 2. Literature review

In literature there are different approaches to evaluate a company economic, social and environmental conduct, based on: economic indicators (e.g. Lee & Jang, 2007; Capece, Di Pillo, & Leviaidi, 2013), quality indicators (e.g. Parast & Adams, 2012; Calabrese & Scoglio, 2012), efficiency and productivity (e.g. Hwang, Chen, Chen, Lee, & Shen, 2013; Calabrese, 2012), innovation and technology assessment (e.g. Grimaldi & Hanandi, 2013; Costa, 2012; Calabrese, Gastaldi, & Leviaidi Ghiron, 2005), communication effectiveness (e.g. Du, Bhattacharya, & Sen, 2010; Capece & Costa, 2009) and market efficiency (e.g. Di Pillo, Cricelli, Gastaldi, & Leviaidi, 2010; Cricelli, Gastaldi, & Leviaidi, 1999). The impacts of companies' activities on the environment and on the society (Campisi & Gastaldi, 1996; Bianco, Campisi, & Gastaldi, 1995), with respect to the regional economic growth and the local communities' interests (Campisi & La Bella, 1988; Campisi & Nastasi, 1993), lead consumers to reconsider the sustainability of the current business approaches, and to become more responsible and sensible toward environmental and social issues (Capece & Costa, 2013). Nonetheless, CSR considers a company conduct in its business operation as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with stakeholders in a voluntary basis" (EU Commission, 2001).

For this reason, CSR business returns depend on the stakeholders' perception about the company responsible conduct (Becker-Olsen, Cudmore, & Hill, 2006; Greening & Turban, 2000; Peterson, 2004). Therefore, companies have to effectively communicate their CSR initiatives, by enhancing stakeholders' awareness toward the company social commitment (Du et al., 2010). A transparent CSR communication improves credibility of a company CSR commitment and reduces its reputational risks (Forehand & Grier, 2003). Indeed, CSR is a strategic way to differentiate a company from competitors attracting customers, employee and investors (Vogel, 2005).

In order to improve CSR communication with respect to CSR reporting, this paper proposes a Fuzzy AHP methodology to support companies in the process of defining report content, based on the GRI guidelines version G3.1 (GRI, 2011). Moreover, CSR reports can be viewed as a part of the company communication system aimed to reduce the information asymmetry between company and stakeholders (Schadewitz & Niskala, 2010). On the other hand, companies are encouraged by stakeholders to develop self-regulatory schemes for shaping ethical corporate decision making, in particular, by adopting corporate responsibility standards (Koerber, 2010). Among others, the GRI standard is widely adopted and it has been selected for the methodology proposed in this paper.

Following this lead, the process of defining GRI report content consists of the following three steps (GRI, 2011):

- Identification: the company identifies its stakeholders and their expectations and interests, in order to determine a list of CSR relevant topics to assess.
- Prioritization: the company analyzes the CSR relevant topics regarding the significance to the company and to the stakeholders.
- Validation: the company assesses the CSR relevant topics using the "GRI Reporting Principles" and the GRI Performance Indicators.

Once the report is compiled and presented, it must be reviewed in order to capture the change in the stakeholders needs and expectations, providing a more complete and consistent representation of the company impacts over time.

In this paper we present a methodology to improve the reporting of CSR relevant topics by applying a fuzzy AHP approach. This methodology identifies those GRI Indicators which better assess the performance of the sustainability relevant topics.

## 3. The Methodology

With the purpose of selecting the more relevant MPIs according to the economic, environmental and social dimensions, in this paper, we adopt the Fuzzy Analytic Hierarchy Process (AHP) approach. In particular, Fuzzy AHP allows an effective prioritization of MPIs which requires subjective judgments of the company CSR experts about MPIs and CSR dimensions. Actually, AHP could be used to assess CSR relevant topics because of the possibility to consider both quantitative and qualitative criteria. Indeed, MPIs have to reflect the impacts on

economy, environment and society and require qualitative and qualitative information in order to provide a complete description of the CSR topics, ensure transparency and enable stakeholders to make decisions.

Fuzzy AHP, as an extension of the classical AHP approach (Saaty, 1980; Costa & Evangelista, 2008), is employed with the aim to handle the uncertainty of subjective evaluations. CSR experts’ judgments are expressed as linguistic variables, converted in Triangular Fuzzy Numbers (TFNs) and organized in fuzzy pair-wise comparison matrices. These matrices are then processed to obtain the relative weights of items (criteria, sub-criteria and alternatives). In this paper we employ the innovative Fuzzy AHP approach proposed by Calabrese, Costa, & Menichini (2013c).

The outcome of the analysis provides CSR managers with guidelines to improve communication to stakeholders about CSR strategies and practices. Moreover, the prioritization of MPIS allows CSR managers to enhance the quality of CSR reporting (Sustainability Report), highlighting the CSR activities on which to focus the company CSR communication strategy. The Fuzzy AHP provide a ranking expressed by the relative importance of MPIS: the highest ranked MPIS are those that measure more effectively the company CSR performance. An GRI Performance Indicator become MPI only if its relative importance is deemed relevant (greater than a threshold value). Fuzzy AHP methodology requires the description of a complex decision as a structured hierarchy descending from an overall objective to several criteria, sub-criteria and so on until the lowest level. The objective, or the overall goal of the decision, is represented at the top level of the hierarchy. The criteria and sub-criteria, which deconstruct the main decision into more detailed and simplified sub-decision, are represented at the bottom levels.

In order to identify and rank MPIS, we propose a hierarchical structure that is composed by GRI Sustainability Dimensions (at the top level), the GRI Sustainability Aspects (at the intermediate level) and the GRI Sustainability Performance Indicators (at the bottom level). In particular, the GRI Sustainability Dimensions are the following: 1) Economic, 2) Environmental, 3) Social. According to these three different sustainability dimensions, the main goal of our analysis is further separated into three different goals, aimed, respectively, to identify the economic, environmental and social MPIS. The GRI indicators are organized in “GRI Indicator Protocol sets”: indicators are subdivided in “Aspects” (e.g. in Table 1 GRI Aspects are “Employment”, “Labor Management Relations”, etc.) grouping indicators regarding homogeneous CSR issues. In the Fuzzy AHP hierarchy criteria and sub-criteria correspond, respectively, to the Sustainability Aspects and the GRI Performance Indicators (Table 1).

Table 1. GRI Aspects, GRI Indicators, Local and Global weights

GRI Aspects	GRI Indicators	Local weight	Global weight
<b>Employment</b>			<b>0.0882</b>
	LA1 Total workforce by employment type, employment contract, and region, broken down by gender.	0.3860	0.0341
	LA2 Total number and rate of new employee hires and employee turnover by age group, gender, and region.	0.2002	0.0177
	LA3 Benefits provided to full-time employees that are not provided to temporary or part time employees, by significant locations of operation.	0.2054	0.0181
	LA15 Return to work and retention rates after parental leave, by gender.	0.2084	0.0184
<b>Labor Management Relations</b>			<b>0.0683</b>
	LA4 Percentage of employees covered by collective bargaining agreements.	0.4111	0.0281
	LA5 Minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements.	0.5889	0.0402
<b>Occupational Health and Safety</b>			<b>0.1884</b>
	LA6 Percentage of total workforce represented in formal joint management–worker health and safety committees that help monitor and advise on occupational health and safety programs.	0.2814	0.0530
	LA7 Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	0.1519	0.0286
	LA8 Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	0.1629	0.0307
	LA9 Health and safety topics covered in formal agreements with trade unions.	0.4038	0.0761
<b>Training and Education</b>			<b>0.1154</b>
	LA10 Average hours of training per year per employee by gender, and by employee category.	0.2046	0.0236
	LA11 Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	0.3883	0.0448
	LA12 Percentage of employees receiving regular performance and career development reviews, by gender.	0.4071	0.0470
<b>Diversity and Equal Opportunity</b>			<b>0.2555</b>
	LA13 Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	0.2555	
<b>Equal remuneration for women and men</b>			<b>0.2805</b>
	LA14 Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	0.2805	

The example of Table 1 illustrates an application of the proposed methodology to CSR experts of a service company. The purpose of this application is to determine the relative importance of GRI Performance Indicators belonging to a subclass of the social dimension regarding the “Labor Practice and decent Work”. By applying the Fuzzy AHP procedure described in Calabrese et al. (2013c) we obtain local and global weights for each GRI Aspect and each GRI indicator (MPIs).

The outcome of the application (Table 1) supports CSR managers in focusing on those CSR activities that are deemed the most important for the CSR communication strategy of the company. The key Aspects to focus on, both in terms of communication and reporting, are: “Equal remuneration for women and men” (28.05%), “Diversity and equal opportunity” (25.55%), “Occupational health and safety” (18.84%) and “Training and education” (11.54%). Deepening the analysis at the GRI indicators level, the most relevant indicators to communicate and report are: LA14 (28.05%), LA13 (25.55%), LA9 (7.61%), LA6 (5.3%) and LA12 (4.7%).

#### 4. Conclusions

The increasing attention to business impacts on society requires companies to be responsible for their business activities. CSR is the management approach that ensures accountability and transparency for companies committed for the sustainable development. For this reason, sustainability reporting is becoming a crucial activity in maintaining effective relationship between company and stakeholders.

Moreover, the reliability of the information provided by means of the Sustainability Report, enhances the possibility for the company to obtain benefits and opportunities from CSR commitment. Following this lead, in order to increase the credibility of CSR communication, different standards were developed. Among them, the GRI framework is one the most well known and complete, requiring companies to report on the economic, environmental and social sustainability dimensions.

In order to improve the GRI report content, this paper proposes a Fuzzy AHP approach to identify the performance indicators, which better capture and measure the sustainability performance of a company. The selection is based on the CSR managers’ subjective judgments, which are represented as fuzzy linguistic variables for enabling the effective prioritization of GRI indicators (MPIs). The methodology allows assessing the relative importance of each GRI indicator in order to describe the performance of company CSR practices. The proposed methodology offers CSR managers directions to improve sustainability reporting as a key activity of the CSR communication: the application of the presented methodology ensures a more effective CSR report and favors company to obtain benefits from CSR practices.

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